

TS-940 LCD Display – LED installation kit & Clock Battery Replacement

The TS-940S LED Upgrade kit was designed to replace the original incandescent lights in the original LED display. This kit is easy to install and should provide years of extended life to your Display. The enclosed super bright White LEDs produce a very cool looking blue display.

Unpacking the kit:

Unpack the kit and make sure that you have the following components:

- 2 ea. 3mm White High Brightness LEDs
- 2 ea. 510 ohm resistors
- This instruction manual
- 2 CR-2032 Batteries with solder tabs – (If ordered)5



Installing the LEDs

1. First, remove the top and bottom covers of the radio and set them aside
2. Next, remove the left and right side Philips head screws to tilt the front panel down to access the LED display

Be careful when tilting the front panel. There are a few things that get in the way. You only need to tilt it enough to remove the LCD display.

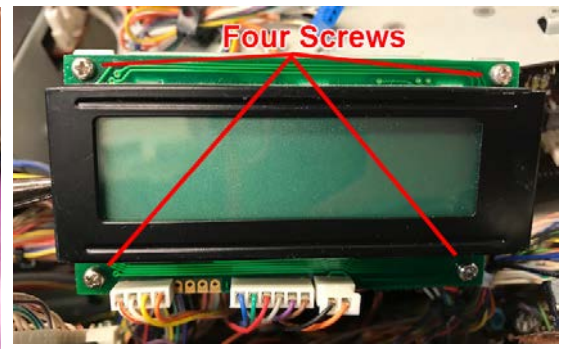
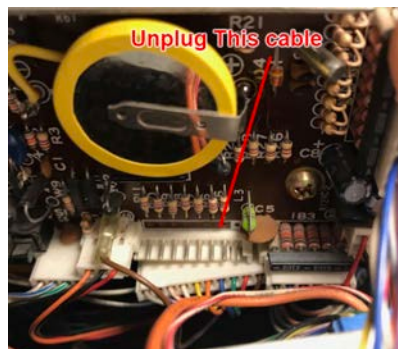


Remove these 2 screws



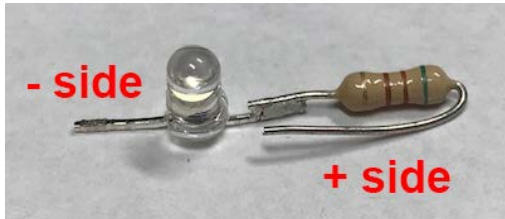
3. Once the front panel is tilted down, remove the 2 screws that hold in the clock/timer & LCD display modules. (see image of the 2 screws just above the battery. You can then tilt out the Timer module and LCD display.
4. There are 4 screws holding the LCD display to the timer module. We suggest using a magnetic screw holding Philips screwdriver to remove the screws. Being careful not to drop any screws inside the radio! They are very hard to find! Remove the four screws, then unplug the 2 pin black and orange wire from the right (Front) side of the display.

5. Finally, unplug the 10 pin cable as shown below on the battery side of the clock board. Now, the LCD display should be completely free and ready for the LED upgrade. Be sure to handle the LCD display carefully and it is a good idea not to touch the glass on the front.



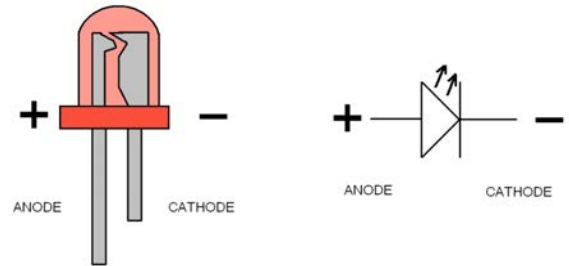
TS-940 LCD Display LED Installation and Clock Battery Replacement

- Once you have the display detached from the clock board, lay it down with the display down and the circuit board facing up. Use a small pencil type iron to remove the 2 existing incandescent light bulbs from the circuit board side of the display. There are 2 small pads on each end of the display. Simply heat each pad very quickly and lift up the wires from the light bulbs. You can also choose to just cut the wires on the bulb and lift them out. Pull straight up on the light bulbs and they will come right out.
- To install the new LEDs, bend the - side (Short wire) at a 90 degree angle and cut it to about 1/4" as shown. Then, solder one side of the 510 ohm resistor to the + side of the LED as shown.



- Next, just insert the LED into the space where the old lights came out and solder as shown. NOTE: Pay attention to which side is + and -. They are mounted in different directions on the board as you can see so make sure that you have the polarities correct. Once you have the LEDs correctly mounted on the LCD display, re-mount the LCD to the clock board using the 4 screws that were removed in step 4.

- Be sure to plug in the 2 conductor cable that was removed in step 4 and the 10 pin connector from Step 5.
- Remount the LCD Display and Clock module using the 2 screws that were removed in Step 3. It is a good idea to test the display to make sure the LEDs were installed correctly. The LCD display should have a great looking Blue color with nice high brightness!



Clock Battery replacement

While you have the front panel of the TS-940 tilted out, it is a great time to remove and replace the clock battery. This is a 3V memory retention battery for the clock/timer that will provide years of service, but one that rarely gets replaced.

Here is how:

- Look at the existing battery and its orientation. The positive side (+) is on the top normally. On most batteries, it is clearly marked.
- It is a good idea to check the voltage across the battery with the power unplugged from the radio. If it is +3V or above, the battery is still good.
- To replace the battery, simply unsolder both sides of the battery and remove it. Re-solder the new battery making sure that the + and - terminals are oriented correctly.
- NOTE: Some TS-940s have 2 batteries soldered into the clock module. You can replace these with one. The 2 batteries were apparently an optional way of extending the battery life but to our knowledge, there was no other reason since they were in parallel.
- After the replacement is finished, you can carefully tilt the front panel back into place and re-install the 2 flat head screws that were removed in Step 2.
- Replace the top and bottom covers.



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Internal Battery Replacement

1. There is a 2nd battery that should also be replaced. It is located under the speaker and then inside an RF Can (Digital A Unit). On the left and right sides of the speaker assembly, you will find two screws that need to be removed on each side. After you remove these, the entire speaker assembly can be pulled up and moved out of the way to the right.
2. Next, remove all 8 screws from the cover over the Digital A Unit. Once the cover screws are removed you can carefully swing the cover to the left and out of the way. This exposes the battery so it can be replaced.



3. Remove the old battery with a low wattage soldering iron by simply heating up the tab until the solder melts then lift the tab straight up and off of the board.
4. Install the new battery and make sure that the + side of the battery goes to the left and the - side goes to the right. The new battery (Yellow) is installed just like you found the original.
5. Carefully re-install the cover to the Digital A Unit with the 8 screws and then re-secure the speaker with the 4 screws that were removed in Step 1

NOTE: These batteries should last at least 5 years but should be checked occasionally to make sure they are at a voltage of +3V or more. If the TS-940S has to be continually reset using the A=B key on power-up, it is an indication that the Digital A Unit battery is defective.

If the TS-940S time changes from your initial settings, it is an indication that the Clock/Timer battery is defective and it should be replaced.

